Choosing Functional Performance Measures in Geriatric Rehabilitation

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Course Objectives

After successfully completing this continuing education course, the learner should be able to:

1. Identify what functional performance measures (FPMs) can assess
2. Discuss the history of the clinical use of FPMs
3. Differentiate between different types of functional performance measures, outcome measures, and similar instruments
4. Describe factors in the selection and use of FPMs with older adults
5. Identify how impairments relate to functional deficits
6. Delineate important factors to consider in selecting the correct FPM for specific patients
7. Explain why mobility measures, balance and fall risk measures, and functional measures are important in geriatric assessment
8. Identify at least 3 mobility measures and 4 balance measures commonly used with older adults and describe their parameters, use, and interpretation
9. Choose and apply one or more appropriate FPMs to use in a given case scenario

Background

It's all about function…

Physical therapist scope of practice:

"Physical therapy is a dynamic profession with an established theoretical and scientific base and widespread clinical applications in the restoration, maintenance, and promotion of optimal physical **function**. Physical therapists are health care professionals who help individuals maintain, restore, and improve movement, activity, and **functioning**, thereby enabling optimal performance and enhancing health, well-being, and quality of life. Their services prevent, minimize, or eliminate impairments of body functions and structures, activity limitations, and participation restrictions."

American Physical Therapy Association

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Background (cont'd)

Definition of occupational therapy practice:

"The practice of occupational therapy means the therapeutic use of occupations, including everyday life activities with individuals, groups, populations, or organizations to support participation, performance, and **function** in roles and situations in home, school, workplace, community, and other settings. Occupational therapy services are provided for habilitation, rehabilitation, and the promotion of health and wellness to those who have or are at risk for developing an illness, injury, disease, disorder, condition, impairment, disability, activity limitation, or participation restriction. Occupational therapy addresses the physical, cognitive, psychosocial, sensory-perceptual, and other aspects of performance in a variety of contexts and environments to support **engagement in occupations** that affect physical and mental health, well-being, and quality of life."

American Occupational Therapy Association

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Why Measure Functional Performance?

- Screening
- Description
- Prediction
- Outcome evaluation

Functional performance measures (FPMs) can:

- Provide accurate, objective record of performance
- Allow comparison with normative data
- Provide prognostic indicators
- Help identify specific impairments
- Support development of patient-centered goals

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History

First definition of ***functional assessment***, 1971, by gerontologist M.P. Lawton:

"Any systematic attempt to objectively measure the level at which a person is functioning in a variety of domains."

Lawton discussed techniques for assessing function of elderly in domains of:

- Physical health
- Physical self-care
- Instrumental activities of daily living
- Mental and psychiatric status
- Social roles and activities
- Attitudes
- Morale
- Life satisfaction

FPMs adopted more widely in the early 1980s; rapid growth in use in 1980s–1990s.

Theoretical Background

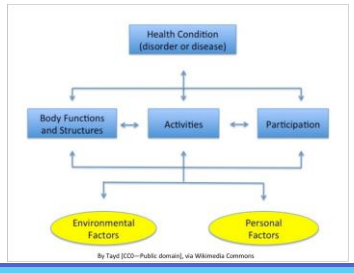
Dale Avers—Two primary drivers behind the use of performance measures:

1. Evidence-based practice
2. Globalization (universal perspective of health)

Focus on:

World Health Organization's (WHO's) 2001 International Classification of Functioning, Disability, and Health (ICF)

WHO ICF Model



By Tayd [CCO—Public domain], via Wikimedia Commons

Impairments Relate to Functional Deficits

Strong relationship between body structure/function impairments and activities/participation (functional performance)

Progression of thought from:

- Focus on impairments to…
- Focus on general function to…
- Focus on **patient-specific function**

FPMs help provide more complete information than assessment of impairments alone.

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Definitions

Functional performance—an individual's capacity to carry out activities required for daily life. Defined by Letts and Richardson as:

- Mobility
- Self-care
- Leisure pursuits
- Activities associated with contributions to society through work or volunteering

Functional measurement—"Functional measurement refers specifically to quantifying an individual's performance of particular tasks and activities in the context of specified social and physical environments." (William Frey)

Functional performance measure—a tool or instrument to complete measurements of specific functional abilities in an organized and standardized way

Older adults—Individuals aged 65 years or older; also referred to as *seniors*, *geriatric population*, *Medicare-age patients*, *elderly*

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What Are We Measuring?

FPMs measure the patient's ability to complete specific mobility tasks and/or basic activities of daily living (sometimes also instrumental ADLs).

Priority areas for geriatric functional performance assessment in PT and OT:

- Mobility—transfers, ambulation (especially walking speed), wheelchair locomotion
- Balance
- Lower extremity function
- Upper extremity function
- Activities of daily living

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Types of Performance and Outcome Measures

Physiological Measures

Examples:
- Rating of perceived exertion
- Pain analog scale
- Mini-Mental Cognitive Index
- Modified Medical Research Council Dyspnea Scale

Condition-Specific or Body-Region–Specific Outcome Measures

Examples:
- Disabilities of the Arm, Shoulder and Hand Outcome Measure (DASH)
- Knee Injury and Osteoarthritis Outcome Score (KOOS)
- Oswestry Low Back Pain Disability Questionnaire
- Pelvic Floor Impact Questionnaire
- WOMAC Osteoarthritis Index

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Types of Measures (cont.)

Self-Report Measures

May include:
- Physiological measures
- Condition-specific measures
- Functional performance measures

Performance-Based Measures

Observer-rated measures; usually assess physical abilities
May be impairment level or functional performance level

Single-Dimension Measures

Assess one element of function

Multidimensional Measures

Assess multiple elements or domains of function

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Limitations of FPMs

- Assess limited aspects of function in specific time frame
- Cannot provide full picture of the individual
- Must be taken in context
- May not be generalized to other environments
- May not reflect the patient's "real world" performance

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Factors in Selecting FPMs

Special considerations with older adults:

- Sensory changes with aging
- Fatigue
- Cognitive changes
- Educational level
- Health literacy

Physiopedia "Guide to Selecting Outcome Measures"—https://www.physiopedia.com/Guide_to_Selecting_Outcome_Measures

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Factors in Selecting FPMs

- Safety
- Reliability
- Validity
- Responsiveness
- Sensitivity and specificity
- Floor and ceiling effects
- Appropriateness
- Relevance
- Sequence of testing
- Time/difficulty to administer
- Cost/other resources required
- Facility/clinician preference

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Using Standard Procedures

Consistency is key to accurate interpretations of the domains being tested. Norms, reliability, validity, diagnostic accuracy, and other test attributes are based on administering the test using the published procedures.

All variations from standard procedures should be documented.

Qualitative study by Krohne et al.—"The test situation generates a tension between what standardization demands and what individualization requires." PTs and OTs navigate between adherence to standards and meeting individual patient needs. This is done using professional *relational competence*.

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Where to Find FPMs

- In-clinic resources
- Other therapists
- Shirley Ryan AbilityLab database https://www.sralab.org/rehabilitation-measures
- Physio-pedia.com (https://www.physio-pedia.com/)
- NeuroToolkit and OrthoToolkit websites (https://www.neurotoolkit.com/ and https://www.orthotoolkit.com/)
- Geriatric Toolkit website, University of Missouri (https://geriatrictoolkit.missouri.edu/)
- Center for the Study of Aging and Human Development website, Duke University (https://sites.duke.edu/centerforaging/claude-d-pepper-older-americans-independence-center/cores/physical-measures-core-pmc/functional-assessment-measures/)
- YouTube.com
- APTA PTNow website (for members)
- AOTA website

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Self-Report Measures

Falls Efficacy Scale International (FES-I)

16-item questionnaire—measures concerns about falling. Available in multiple languages. FES-I Short Form (7 items) also available.
University of Manchester, U.K.—https://sites.manchester.ac.uk/fes-i/

Activities-Specific Balance Confidence Scale (A-SBC or ABC Scale)

16-item questionnaire—measures confidence in performing daily activities without falling
NeuroToolkit—https://www.neurotoolkit.com/abc-scale/

Geriatric Depression Scale (GDS) Short Form

15-item questionnaire—screens for depression. Available in multiple languages.
Stanford University—https://web.stanford.edu/~yesavage/GDS.html.

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Mobility Measures—Single-Activity

Gait Speed

Sometimes called the "sixth vital sign."

Decreased walking speed in elderly is associated with:

- Decreased balance confidence
- Future decline in health status
- Increased risk of falls, disability, cognitive impairment, hospitalization/institutional care, mortality

Gait speed of ≤0.8 m/s is a predictor of poor clinical outcomes.

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Mobility Measures—Single-Activity (cont.)

Distance Walk Tests

6-Minute Walk Test (6MWT)

Items required:
- Stopwatch
- Chair
- Measuring device (meters)
- Hallway/open area at least 12 meter in length
- Markings to indicate turnaround (tape, cones)
- Lap counter or pencil/paper to count laps

Normative Data: 6MWT		
Age	Men	Women
60–69	560	505
70–79	530	490
80–89	446	382

*In meters, as reported by Avers

Available at: http://neuropt.org/docs/default-source/cpgs/core-outcome-measures/core-outcome-measures-drafts--march-2018/6mwt_protocol_final.pdf?sfvrsn=36cd5443_4

2-Minute Walk Test (2MWT)—more appropriate with some geriatric patients

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Mobility Measures—Single-Activity (cont.)

Distance Walk Tests (cont.)

400-Meter Walk Test (Long Corridor Walk Test)

Measures community mobility distance

Items required:
- Stopwatch
- Measuring device (meters)
- Hallway/open area at least 20 meter in length
- Markings to indicate turnaround
- Lap counter or pencil/paper to count laps

Floor effect—no score if incomplete.

Time of >7 minutes associated with increased risk of significant functional limitations.

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Mobility Measures—Single-Activity (cont.)

Sit-to-Stand (Chair Rise) Tests

Proxy for lower extremity strength/power. Requirements: chair without arms, stopwatch.

Five Times Sit to Stand (5TSTS) Test

Associations:
- ≥10 seconds—risk of disability
- >15 seconds—risk of multiple falls
- Incomplete—risk of ADL-related and IADL-related disability

Normative Data: 5TSTS	
Age	Time in Seconds
60–69	11.4
70–79	12.6
80–89	12.7

As reported by Avers

30-Second Sit to Stand (30-Second STS) Test

Associations:
- ≤8 reps—risk of developing frailty, disability mobility
- ≤ 12 reps—need for further assessment of fall risk in patients over age 74

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30-Second Sit to Stand Test (cont.)

Normative Data: 30-s STS		
Age	Reps	
	Men	Women
60–64	16.4	14.5
65–69	15.2	13.5
70–74	14.5	12.9
75–79	14.0	12.5
80–84	12.4	11.3
85–89	11.1	10.3
90-94	9.7	8.0
As reported by Avers		

By CDC [Public domain], via https://www.cdc.gov/steadi/pdf/STEADI-Assessment-30Sec-508.pdf

Mobility Measures—Single-Activity (cont.)

Floor Transfer (Floor Rise) Test

Nearly half of older adults with non-injury falls cannot rise from the floor without assistance. Inability to rise from the floor is associated with increasing age, greater comorbidities, lower functional capacity.

Poor floor rise test results may be one of the earliest indicators of mobility-related disability.

No specific protocol agreed on.

Floor rise practice is an appropriate intervention for many older adults at high risk for falls. It is included in the National Institute on Aging Go4Life exercise initiative.

By National Institute on Aging, U.S. Department of Health and Human Services [Public domain], via https://go4life.nia.nih.gov/exercise/getting-up-from-the-floor/

Mobility Measures—Single-Activity (cont.)

Timed Up and Go (TUG) Test

Assesses mobility, gait, balance, and fall risk. Use of an assistive device is permitted. Used primarily for adults age 65+, particularly those with:

- Frailty
- Osteoarthritis
- Parkinson's disease
- Brain injury
- Stroke
- Dementia

Less useful among high-functioning, healthy older adults.

Often used as a screening tool.

Score of ≥12 seconds is associated with increased risk of falls, ≥14 seconds with high risk of falls.

Normative Data: TUG Test		
Age	Time (seconds)	
	Men	Women
60–69	8	8
70–79	9	9
80–89	10	11
As reported by Avers		

TUG Test (cont.)

Interpretation:

- ≤ 10 seconds = normal
- ≤ 20 seconds = good mobility, can go outside alone, mobile without gait aid
- ≤ 30 seconds = mobility problems, cannot go outside alone, requires gait aid

Available at:
https://www.thompsonhealth.com/Portals/0/_RehabilitationServices/PT%20Mgmt%20of%20Knee/Functional_Tests.pdf
OR
https://www.cdc.gov/steadi/pdf/TUG_Test-print.pdf


ASSESSMENT

Timed Up & Go (TUG)

By CDC [Public domain] via https://www.cdc.gov/steadi/pdf/TUG_Test-print.pdf

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Mobility Measures—Single-Activity (cont.)

Dual-Task Timed Up and Go (Dual-Task TUG) Test

Increased challenge compared to standard TUG Test. Standard protocol not agreed on. Different versions described by Shumway-Cook et al., Hofheinz and Schustershitz, Lundin-Olsson et al., and Maranhão-Filho et al.

Motor/manual task (usually carrying glass of water) or cognitive task (usually serial subtraction by 3s, starting at a random number between 20 and 100).

Recommendations from Avers:

- Timing should begin on the command Go, rather than when the individual starts to move.
- Walking pace should be at self-selected speed.
- Timing should be stopped when the individual is sitting with the back against the chair.

Scores are typically 1 to 3 seconds slower than on the standard TUG Test.

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Mobility Measures—Multi-Activity Physical Performance Tests

Physical Performance Test (PPT)

Assesses multiple physical function domains (mobility and ADL-related) based on 9 activities:

- Writing a sentence
- Simulating eating
- Lifting a book and placing it on a shelf
- Donning and doffing a jacket
- Picking a coin up from the floor
- Turning 360 degrees
- Walking 50 feet
- Climbing one flight of stairs
- Climbing up to four flights of stairs

Each item scored 0 to 4 for maximum total of 36 points.

7-item PPT omits stair-climbing activities. Modified PPT omits writing and eating, adds sit-to-stand and static balance tasks.

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Mobility Measures—Multi-Activity (cont.)

Physical Performance Test (cont.)

Equipment required:

- Stopwatch
- Pen and paper
- Teaspoon
- 5 dried kidney beans
- Empty coffee can
- Heavy book
- Access to a shelf at above shoulder level (seated)
- Jacket, cardigan, or lab coat
- Penny
- Hallway or open area of 25 feet
- 4 flights of stairs

Normative Data: PPT	
Age	Score
60–69	31
70–79	29
80–89	27
As reported by Avers	

Available at:

https://geriatrictoolkit.missouri.edu/

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Mobility Measures: Multi-Activity (cont.)

Short Physical Performance Battery (SPPB)

Developed in 1994 by the National Institute on Aging; widely used in research. Assesses abilities in three areas:

- Static standing balance
- Self-selected walking speed
- Repetitive rising from a chair

Equipment required:

- Hallway or open area
- Tape to mark the floor for a 4-meter walk course
- Standard-height chair without arms
- Stopwatch

Assistive device is allowed. Maximum score 12 points; higher scores indicate better lower extremity function. May have ceiling effect with healthy, high-functioning older adults.

Available at:
https://www.sralab.org/sites/default/files/2018-03/SPPB-Score-Tool.pdf

OR

https://geriatrictoolkit.missouri.edu/SPPB-Score-Tool.pdf

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Multidimensional Instruments

Functional Independence Measure (FIM)

An 18-item observer-rated tool; assesses level of independence with self-care and mobility tasks. Includes items on communications, cognition, social interaction. Dimensions assessed include:

1. Eating
2. Grooming
3. Bathing
4. Upper body dressing
5. Lower body dressing
6. Toileting
7. Bladder management
8. Bowel management
9. Bed to chair transfer
10. Toilet transfer
11. Shower transfer
12. Locomotion (ambulatory or wheelchair)
13. Stairs
14. Cognitive comprehension
15. Expression
16. Social interaction
17. Problem solving
18. Memory

Uses 7-point scale; 1 = completely dependent (total assist), 7 = completely independent.

Requires training/certification. To purchase license: http://www.udsmr.org. For additional information: https://www.udsmr.org/Documents/The_FIM_Instrument_Background_Structure_and_Usefulness.pdf

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Multidimensional Instruments (cont.)

The Outcome and Assessment Information Set (OASIS)

Designed to collect data on home health care to identify care needs and assess outcomes. Mandated as a condition of participation in Medicare since 1999.

Covers current health status, functional status, sociodemographic characteristics, environmental factors, social support, and health service utilization. Includes a multifactorial fall risk assessment.

Items in the ADLs/IADLs section include:

- Grooming
- Eating
- Lower body/upper body dressing
- Bathing
- Toileting
- Transfers
- Ambulation/locomotion
- Planning and preparing light meals
- Using the telephone

Available at the Centers for Medicare & Medicaid Services website at cms.gov.

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Multidimensional Instruments (cont.)

Short Form Health Survey (SF-36)

Multi-purpose 36-question self-report tool; assesses functional status and health-related quality of life over the previous 4 weeks. Derived from the RAND Health Insurance Medical Outcomes Study (MOS).

Domains covered include:

- Physical functioning
- Role limitations due to physical problems
- General health perceptions
- Vitality
- Social functioning
- Role limitations due to emotional problems
- General mental health
- Health transition

Available at: https://www.rand.org/health-care/surveys_tools/mos/36-item-short-form.html.

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Balance and Fall-Risk Measures

Central postural control (equilibrium) relies on input from three contributing systems:

- Vision
- Vestibular sense
- Proprioception

Disturbance in one system is usually compensated for by input from the other two systems.

On average, an older adult falls every second of every day in the U.S. About 30% of community dwelling older adults fall annually. Risk increases with increasing age.

Falls are the leading cause of injuries, injury-related disability, and injury-related deaths among older Americans.

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Static Balance Tests

Romberg Test

Introduced by German neurologist Moritz Heinrich Romberg as proprioception test in 1840s. Patient stands with feet together, eyes open and then eyes closed. Primarily a screening tool.

Romberg test stance

Tandem Stance (Sharpened Romberg) Test

Patient in tandem stance; timed for 30 to 60 seconds. Variations include:

- Barefoot vs. with preferred footwear
- Number of trials
- Which trial is used for scoring (longest vs. shortest trial)
- Assistance used to get into position
- Which foot is forward
- Conditions of test termination
- Type of surface
- Semi-tandem stance vs. full tandem stance

Tandem Semi-tandem

By Rachel Farmer [CCO]

Healthy older adults mean score—eyes open = 49 seconds; eyes closed = 29 seconds. Decreased time may indicate increased risk of future functional deficits.

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Static Balance Tests (cont.)

Single Leg Stance Test

More difficult than Romberg test or tandem/semi-tandem stance. Sometimes called "standing stork" test.

Variations include:

- With or without footwear
- Non-stance leg position
- Time to failure vs. 30 or 60 seconds
- Arms across chest vs. hands on hips
- Eyes open vs. eyes closed
- Adding compliant surface (foam)

Normative Data: SLS Test

Age	Seconds			
	Eyes Open		Eyes Closed	
	Men	Women	Men	Women
60–69	28.7	25.1	3.1	2.5
70–79	18.3	11.3	1.9	2.2
80–99	5.6	7.4	1.3	1.4

As reported by Shirley Ryan AbilityLab database

Available at:
https://www.thompsonhealth.com/Portals/0/_RehabilitationServices/PT%20Mgmt%20of%20Knee/Functional_Tests.pdf

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Variations of the Single Leg Stance Test

Yoga Tree Pose

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Dynamic Balance Tests

Four-Square Step Test (4SST or FSST)

Tests ability to step over low objects forward, backward, and to the side. Designed to identify older adults at risk of multiple falls. Use of assistive device is permitted.

Patient is asked to step into each of the four squares as quickly as possible, following the pattern shown on the next slide.

Score of ≥15 seconds correlates with an increased risk of multiple falls. Has been studied with older adults with:

- Osteoarthritis
- Stroke
- Parkinson's disease
- Limb loss
- Vestibular disorders

Available at: https://www.sralab.org/sites/default/files/2017-06/Four%20Step%20Square%20Test%20Instructions.pdf

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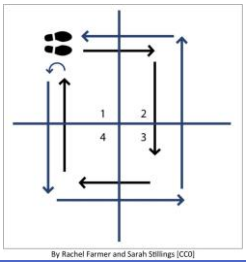
Four-Square Step Test layout



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Multi-Activity Balance Performance Measures

Berg Balance Scale (BBS)

One of best-known balance measures. 14-item instrument that tests dynamic and static balance in older adults; widely used internationally. Designed by Katherine Berg, 1989. Max score 56.

Requirements:

- Stopwatch
- 15-ft walkway
- 2 standard-height chairs (with arm rests, without arm rests)
- Footstool or step of 7.75–9 inches
- Ruler
- Slipper or shoe

Available at:
https://www.physio-pedia.com/images/b/bd/Berg_balance_scale_with_instructions.pdf

Normative Data: BBS		
Age	Score	
	Men	Women
60–69	55	55
70–79	54	53
80–89	52	52
90-101	40	37

As reported by Avers

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Multi-Activity Balance Performance Measures

Berg Balance Scale (cont.)

14-item version takes 15-20 minutes. 7-item test (10 minutes) also available; may have floor effect.

The 14 tasks:
- Sitting to standing; standing to sitting
- Standing unsupported; sitting unsupported
- Transfers
- Standing with eyes closed
- Standing with feet together; tandem; on one foot
- Reaching forward with an outstretched arm
- Retrieving object from floor
- Turning to look behind; turning 360 degrees
- Placing alternate foot on stool

The 7 tasks:
- Reaching forward with outstretched arm
- Standing with eyes closed
- Standing with one foot in front
- Turning to look behind
- Retrieving object from floor
- Standing on one foot
- Sitting to standing

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Multi-Activity Balance Measures (cont.)

Tinetti Performance Oriented Mobility Assessment

Developed in 1986 by Mary Tinetti; widely used in geriatric rehab for over 3 decades. One of the first multi-activity clinical balance assessment tools.

Consists of 9 balance items and 7 gait items; max score of 28 points.
- <19—high risk for falls
- 19 to 24—moderate risk for falls
- >24—low risk for falls

Available at: http://www.whca.org/files/2013/04/TINETTI_assessment_tool.pdf

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Multi-Activity Balance Measures (cont.)

Balance Evaluation Systems Test (BEST or BESTest)

36-item tool developed by Fay Horak, 2009, to "help therapists identify the underlying postural control systems responsible for poor functional balance." Assesses balance across 6 balance control systems:
- Biomechanical constraints
- Stability limits/verticality
- Anticipatory postural adjustments
- Postural responses
- Sensory orientation
- Stability in gait

Max score of 108 is calculated into a percentage score.
Available at: http://www.bestest.us/test_copies/

Mini-BEST (14-item) and Brief-BEST (8-item) also used.

Normative Data: BEST Tests

Age	Score		
	BEST (%)	Mini-BEST	Brief-BEST
60–69	91.4	24.7	20.5
70–79	85.4	21.0	18.8
80–89	79.4	19.6	15.0

As reported by Avers

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Multi-Activity Balance Measures (cont.)

Balance Evaluation Systems Test (cont.)

Equipment required:
- Stopwatch
- Yardstick
- Tape for floor markings
- 4" foam pad (12" x 12")
- 10-degree incline ramp
- 6" stair step
- Two stacked shoe boxes
- 5-lb. free weight
- Standard height chair with arms

BEST items include:
- Functional reach test
- Floor rise test
- Sit-to-stand
- Single-leg stance
- Romberg test
- Several items from the Dynamic Gait Index
- Timed Up and Go (regular and dual-task)

BEST takes about 45 minutes to administer, Mini-BEST about 15-20 minutes.

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Multi-Activity Balance Measures (cont.)

Fullerton Advanced Balance Scale (FAB Scale)

For high-functioning active seniors at risk for falls due to sensory deficits. Not appropriate for those with frailty, mobility impairments, significant functional deficits. Tests static and dynamic balance, sensory reception/integration, reactive postural control.

Equipment required:
- Stopwatch
- Pencil
- 2-inch ruler; yardstick
- 6-inch high bench (18" x 18" stepping surface)
- Masking tape
- 2 Airex® pads; non-slip material
- Metronome

Activities include:
- Stand with feet together and eyes closed
- Retrieve object at shoulder height
- Turn 360 degrees (right and left)
- Step up onto and over a 6-inch bench
- Tandem walk; walk with head turns
- Stand on one leg
- Stand on foam with eyes closed
- Two-footed jump for distance
- Reactive postural control

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Multi-Activity Balance Measures (cont.)

Fullerton Advanced Balance Scale (cont.)

Max. score of 40 for the 10 items. Hernandez and Rose study: The probability of falling increased by 8% with each 1-point decrease in total FAB scale score.

Available at: https://geriatrictoolkit.missouri.edu/fab/index.htm

Community Balance and Mobility Scale (CBM Scale)

Assesses higher level balance and mobility skills needed for full participation in community environments. Used primarily with healthy, high-functioning older adults.

13 tasks, 6 performed bilaterally. Assistive device is NOT allowed except with stairs task. Max score of 96.

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Multi-Activity Balance Measures (cont.)

Community Balance and Mobility Scale (cont.)

Equipment required:
- Stopwatch
- Area to lay out 8-meter track
- Flight of stairs
- Laundry basket or large rigid box
- 2 lb. and 7.5 lb. weights
- Visual target
- Bean bag

Available at:
https://www.uhn.ca/TorontoRehab/Health_Professionals/Documents/TR_HCP_SUPP_CBMScale.pdf

Activities include:
- Unilateral stance
- Tandem walking
- 180-degree tandem pivot
- Lateral foot scooting
- Hopping forward
- Crouch and walk
- Lateral dodging
- Walking and looking
- Running with a controlled stop
- Forward to backward walking
- Walk, look, and carry
- Descending stairs
- Steps-up x one step

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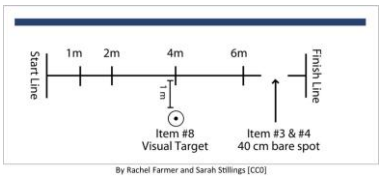
Community Balance and Mobility Scale layout



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Multi-Activity Balance Measures (cont.)

Dynamic Gait Index (DGI)

Developed to assess postural gait tasks in adults age 60+ at risk of falls. Assistive device allowed. 8 items, max score 24. ≤ 19—at risk of falls; 23-24—normal ambulator.

May have ceiling effect. Modified DGI has expanded scoring with less ceiling effect. 4-item short DGI also used in some settings.

Equipment required:
- 20-foot (6.1 meter) hallway or open area
- Shoe box or other similar size box
- Two cones or other objects of similar size
- Flight of stairs

Available at:
https://geriatrictoolkit.missouri.edu/dgi/index.htm

Activities include:
- Walking 20 feet on a level surface
- Walking with gait speed changes
- Walking with horizontal head turns
- Walking with vertical head turns
- Pivoting while walking
- Stepping over an obstacle while waling
- Stepping around an obstacle while walking
- Climbing stairs

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Multi-Activity Balance Measures (cont.)

Functional Gait Assessment (FGA)

Similar to the Dynamic Gait Index. Avers: "The Functional Gait Assessment was developed to clarify the ambiguous directions of the DGI and to add more challenging items for people with vestibular disorders." Equipment similar to DGI.

10 items; 7 same as on the DGI. Max score 30. Score of ≤ 22 = increased risk of falls.

Tasks included:

- Walk 20 feet on a level surface
- Walk with gait speed changes
- Walk with horizontal head turns
- Walk with vertical head turns
- Walk with a narrow base of support
- Pivot while walking
- Step over an obstacle
- Walk with eyes closed
- Walk backward
- Climb stairs

Normative Data: FGA	
Age	Score
60–69	27.1
70–79	24.9
80–89	20.8
As reported by Avers	

Available at: https://geriatrictoolkit.missouri.edu/FGA/index.htm

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Multi-Activity Balance Measures (cont.)

Stopping Elderly Accidents Deaths and Injuries (STEADI)

Broad initiative developed by the U.S. Centers for Disease Control and Prevention to help healthcare providers effectively interact with older adults who have fallen or are at risk of falling Designed to decrease high rates of fall-related morbidity and mortality and to reduce their economic and healthcare burden.

Based on the American and British Geriatrics Societies' clinical practice guideline for fall prevention. Three core elements to reduce fall risk: Screen, Assess, Intervene.

STEADI algorithm can help clinicians determine:

- How to screen for fall risk in older adults
- When and how to implement more detailed assessment
- What types of interventions are appropriate
- When to follow up

Available at: : https://geriatrictoolkit.missouri.edu/STEADI/index.html OR https://www.cdc.gov/steadi/index.html

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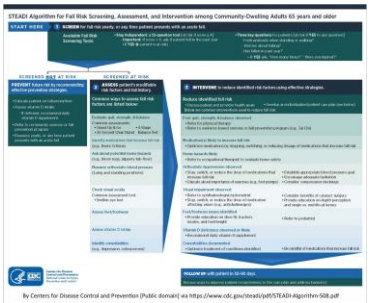

By Centers for Disease Control and Prevention (Public domain) via https://www.cdc.gov/steadi/pdf/STEADI-Algorithm-508.pdf

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Clinical Scenario

Background: High-functioning 71-year-old female swimmer and tennis player; C/O changes in balance ability due to mild peripheral neuropathy.

Possible FPM choices:

- Romberg Test
- Tandem Stance
- Tinetti Test
- Berg Balance Scale
- Fullerton Advanced Balance Scale

Which is the best choice for this patient, and why?

Conclusion

Choose the best FPMs for your specific patients based on all the factors discussed.

Better understanding of current function → Better interventions → Better future function

Better function → Meeting goals → Improved health → Improved quality of life

It's all about function!

Questions?

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